Yuba River Instream Flow Studies

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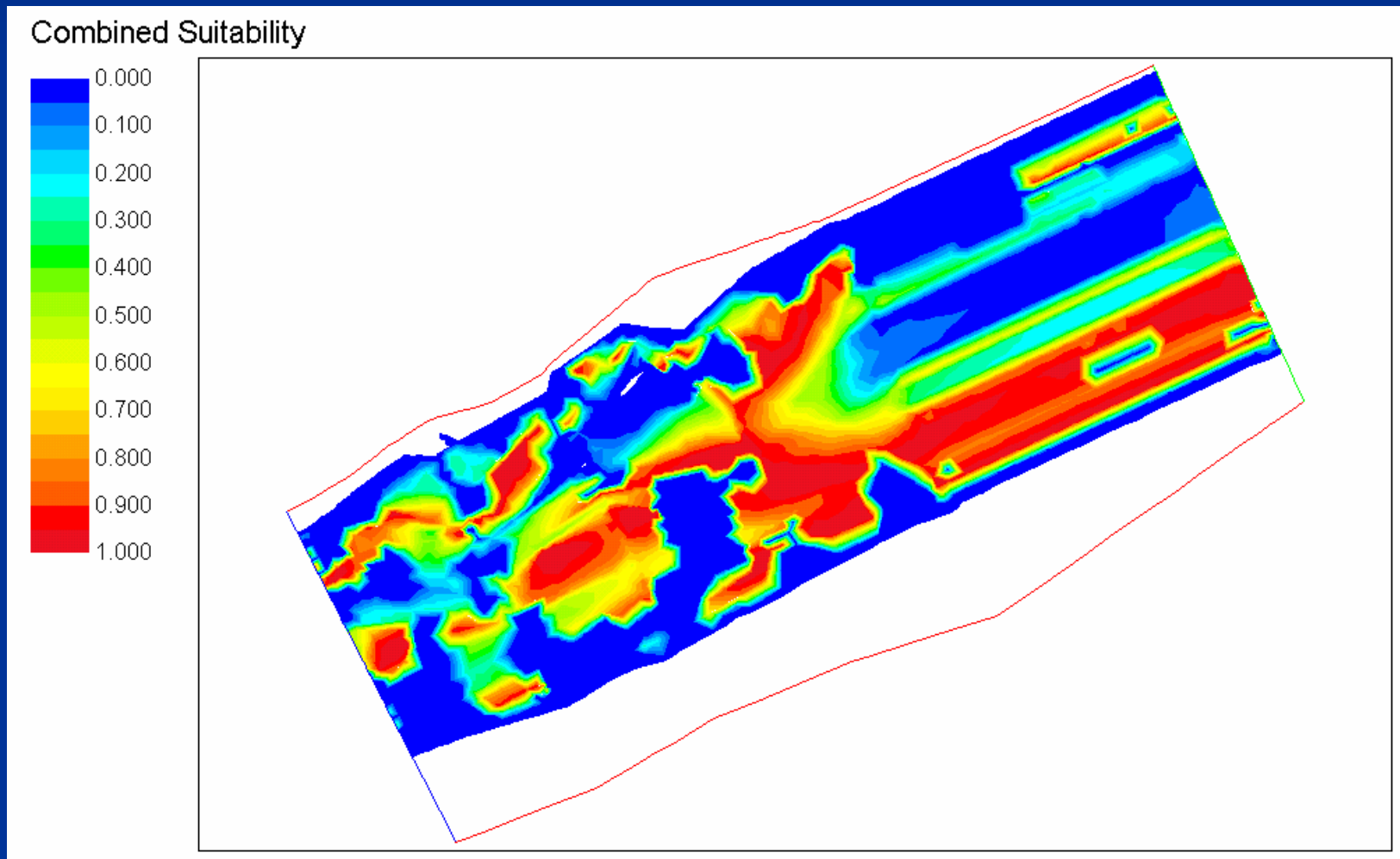
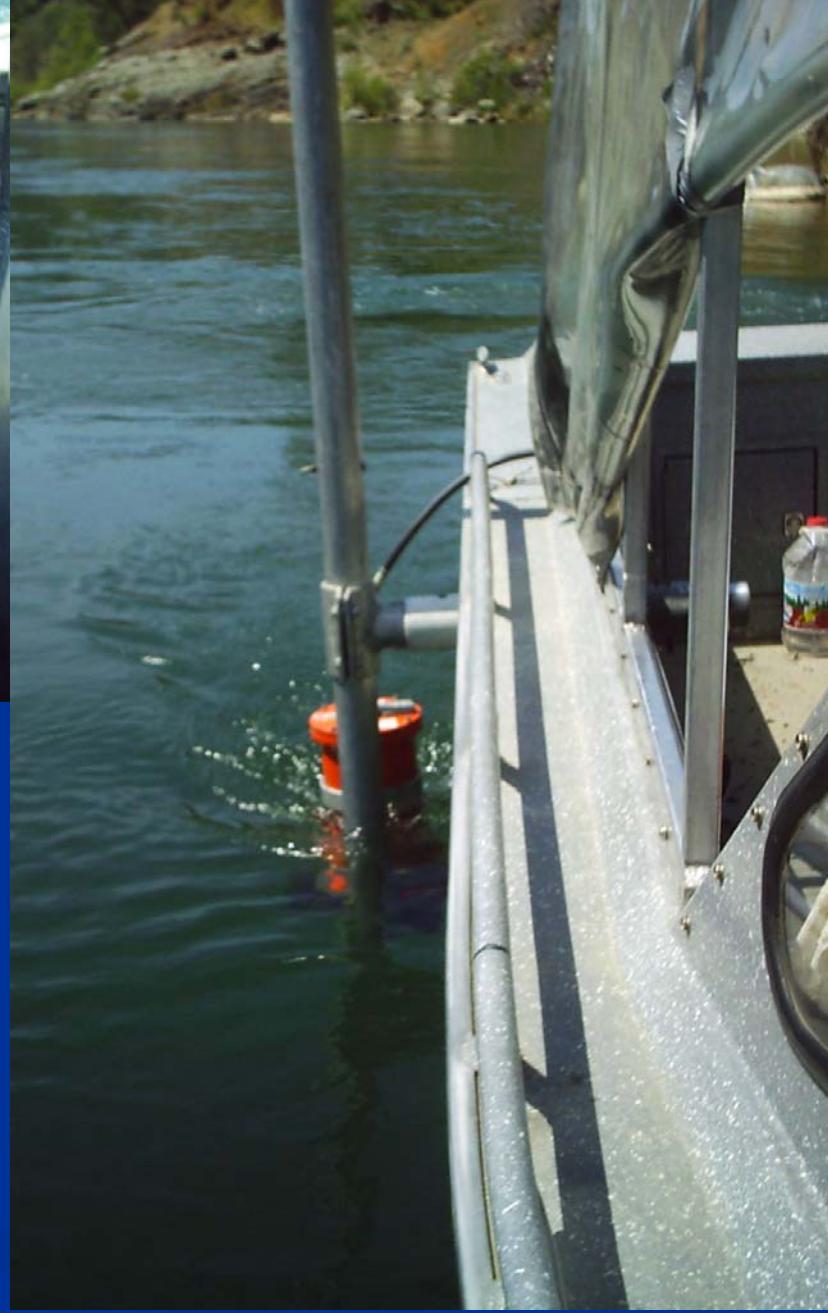
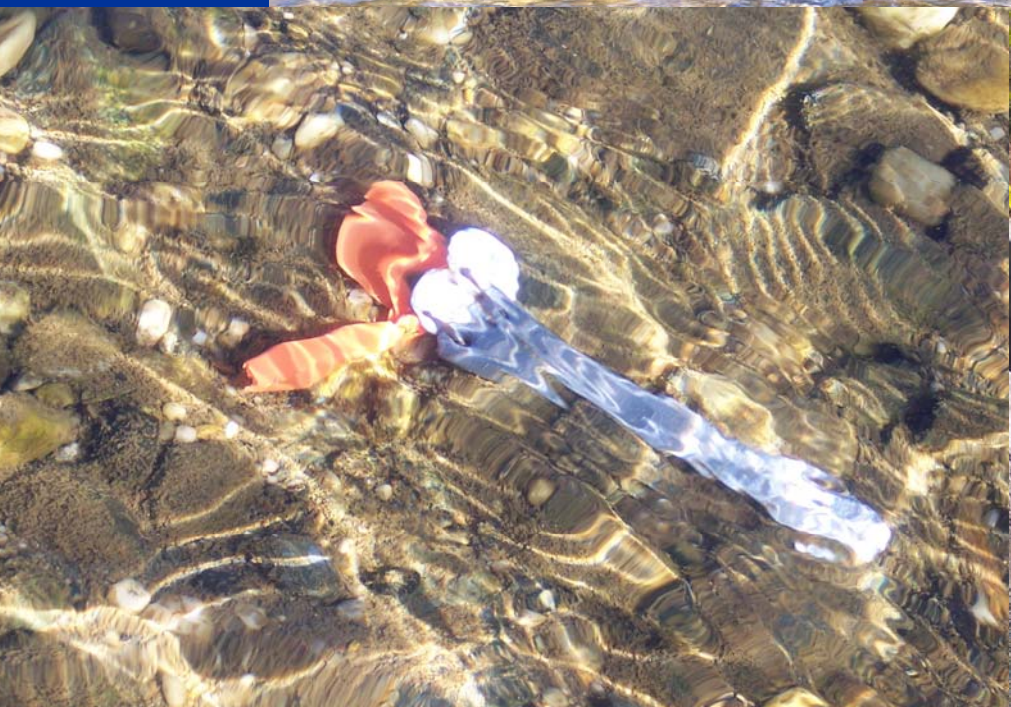
- Spawning: Fall-run and spring-run chinook salmon, steelhead/rainbow trout
- Fry and Juvenile rearing: Fall/spring-run chinook salmon, steelhead/rainbow trout
- River2D model used for hydraulic and habitat simulation

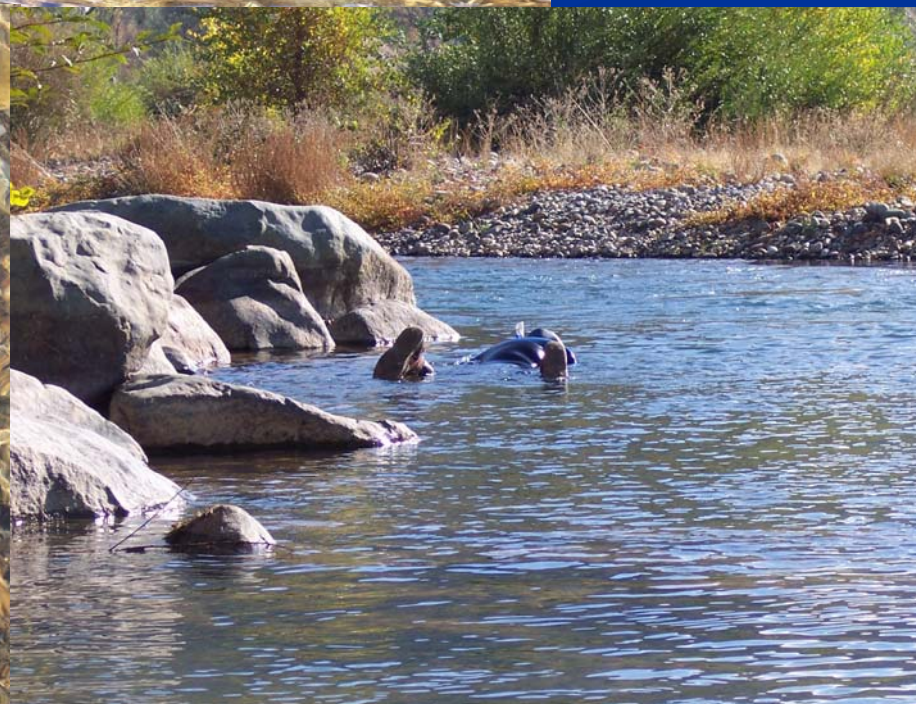


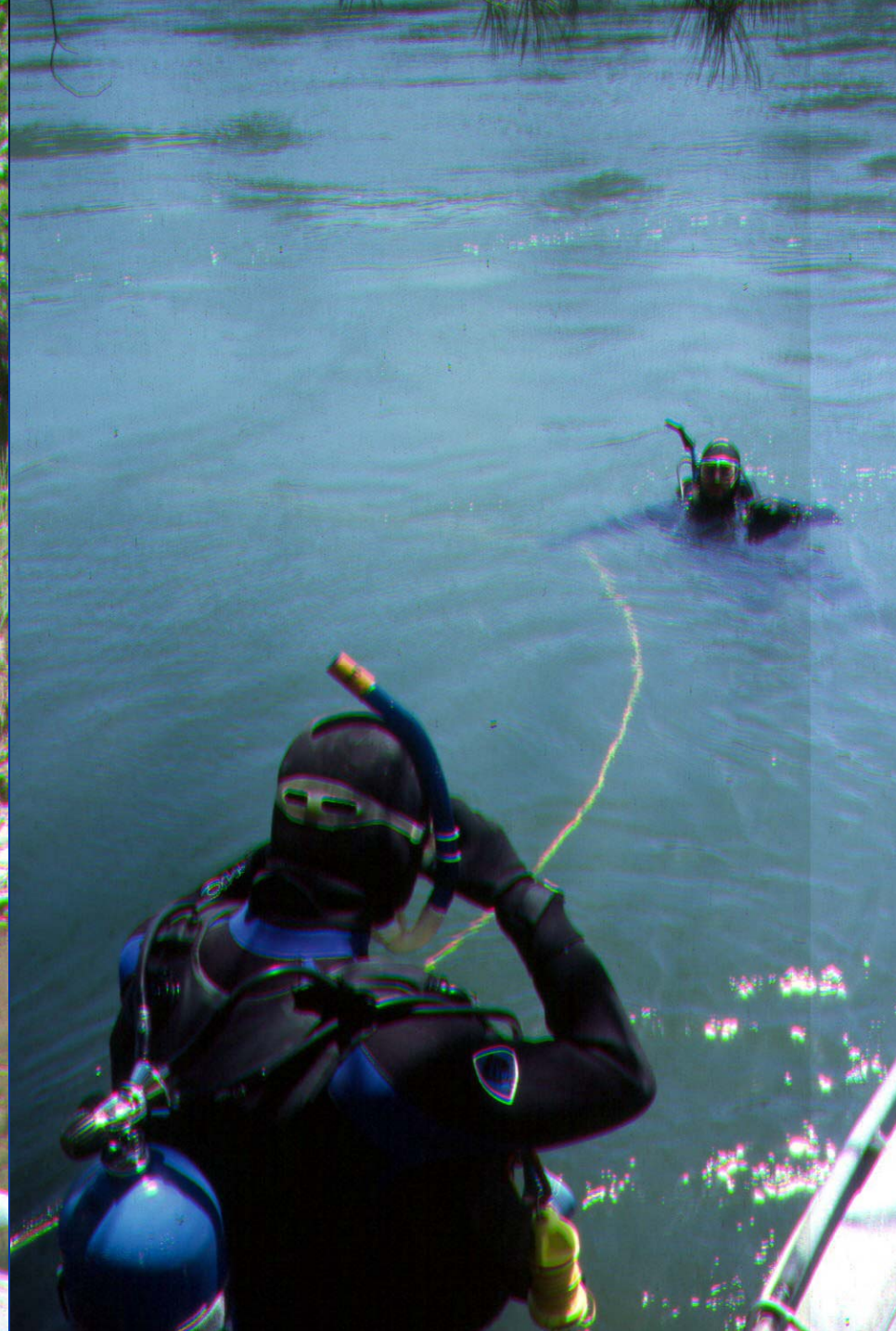
Habitat Suitability Criteria data collection

- Spawning – depth, velocity, substrate. Data collected in shallow areas by wading, in deep areas with ADCP and underwater video system
- Fry and Juvenile rearing – depth, velocity, cover, adjacent velocity. Data collected near-bank with snorkeling, away from bank with SCUBA and ADCP.









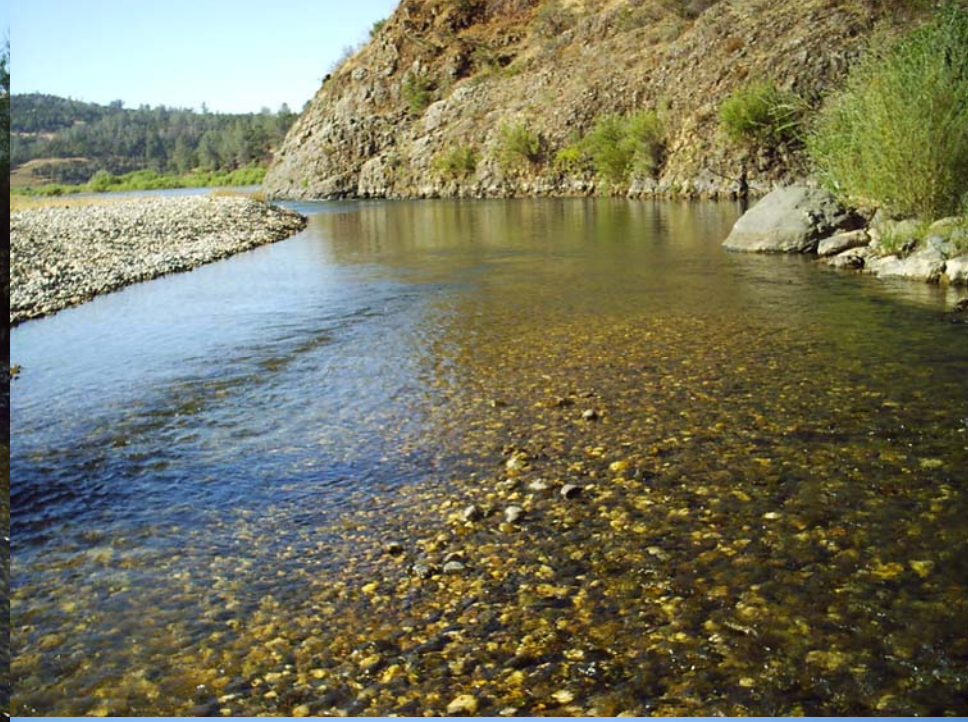
Habitat Site Data Collection

- ADCP and underwater video used to collect topography data in deep portions of the sites.
- Total station used to collect topography data in shallow and dry portions of the sites.
- Velocities collected within site to validate model.
- PHABSIM transects at top and bottom of sites for stage-discharge relationship and portion of bed topography.
- Ten spawning sites (five above Daguerra Dam, five below)
- Eight rearing sites (three above Daguerra Dam, five below)




Habitat Mapping to Extrapolate Rearing Habitat from Sites to Entire River

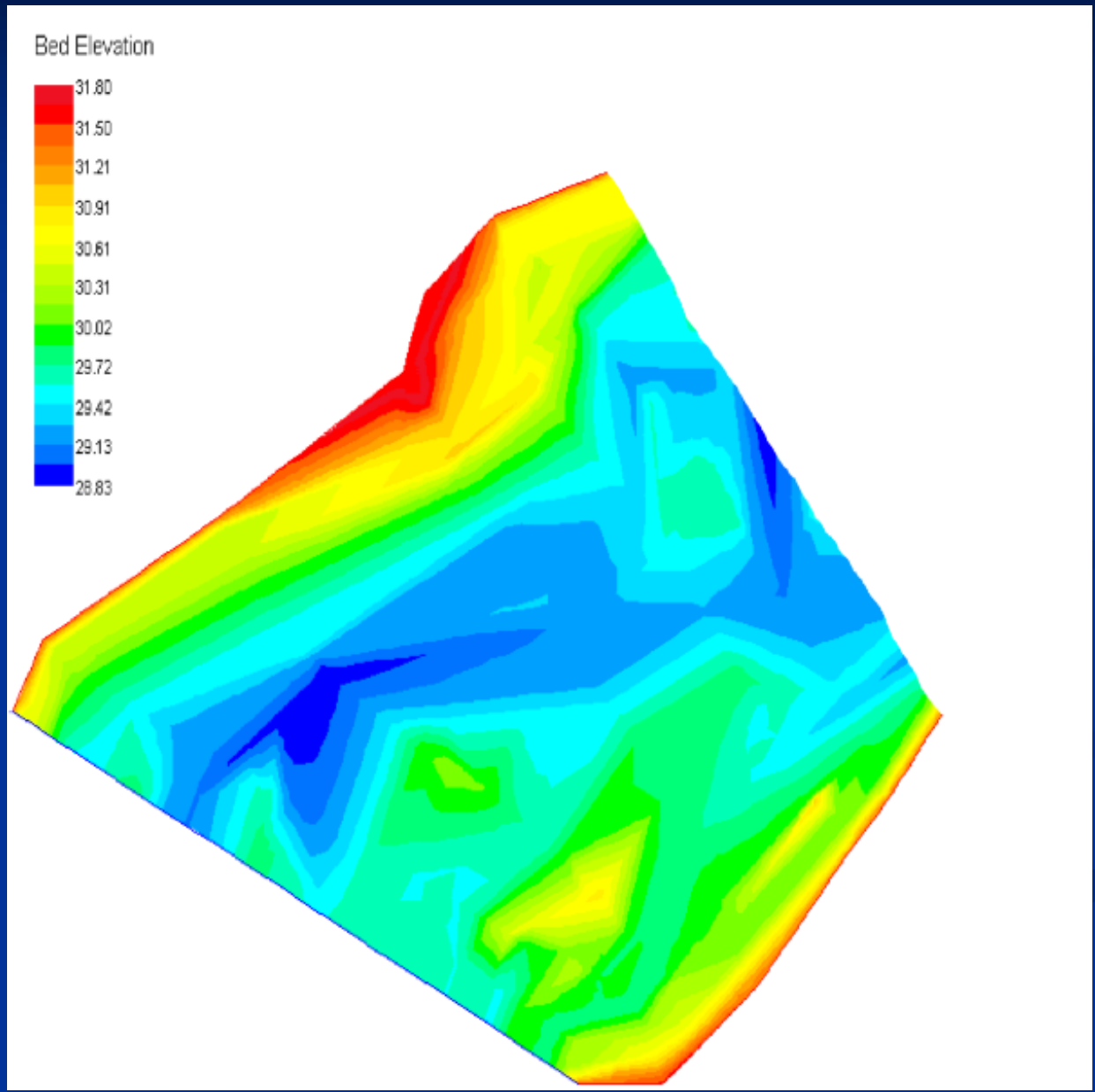
- Bar Complex: riffle, run, glide, pool
- Flatwater: riffle, run, glide, pool
- Side Channel: riffle, run, glide, pool

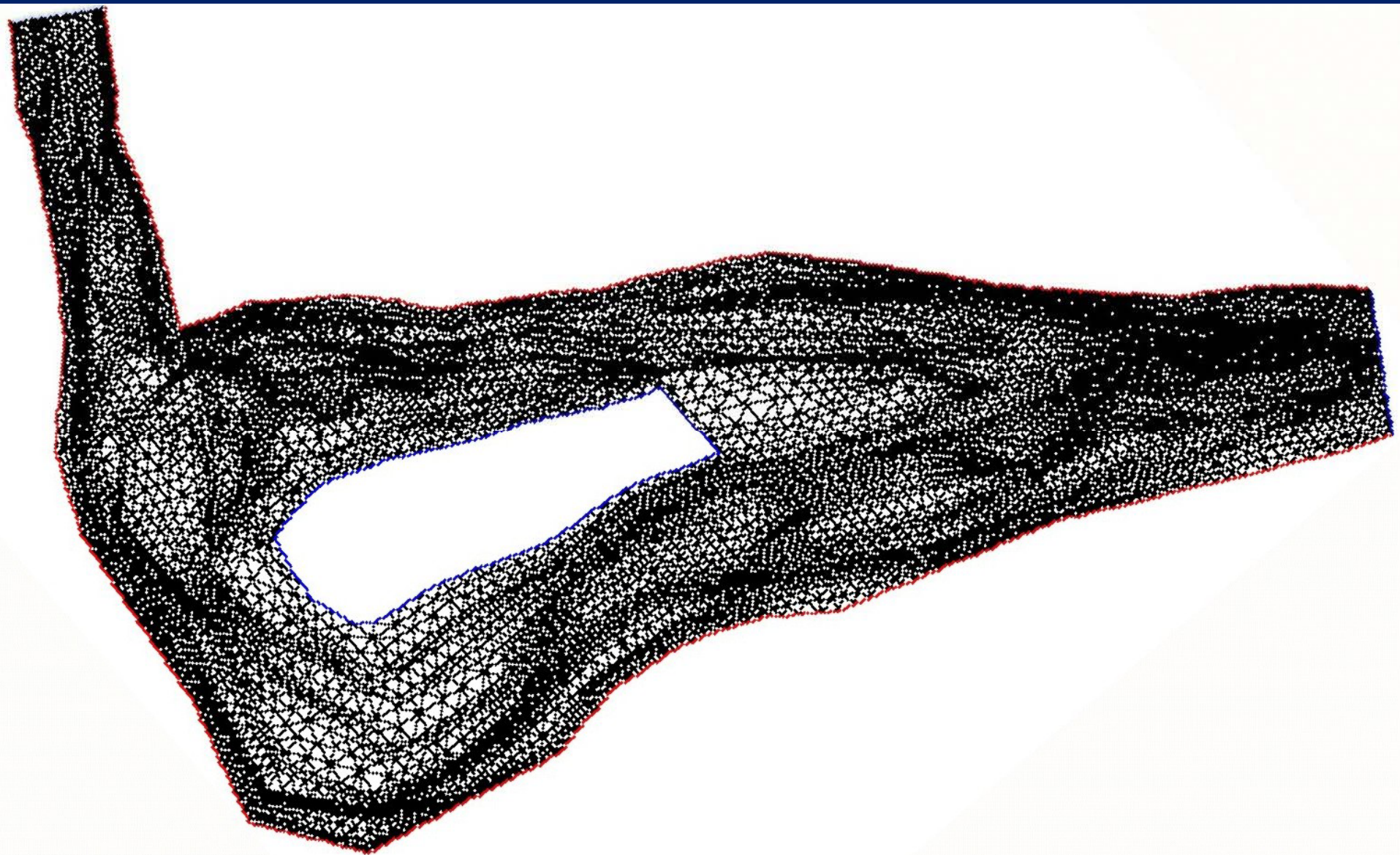
Hydraulic Modeling Steps

- Refine bed topography
- Develop computational mesh
- Conduct hydraulic simulation
- Validate velocity predictions

Example Bed Topography of Study Site

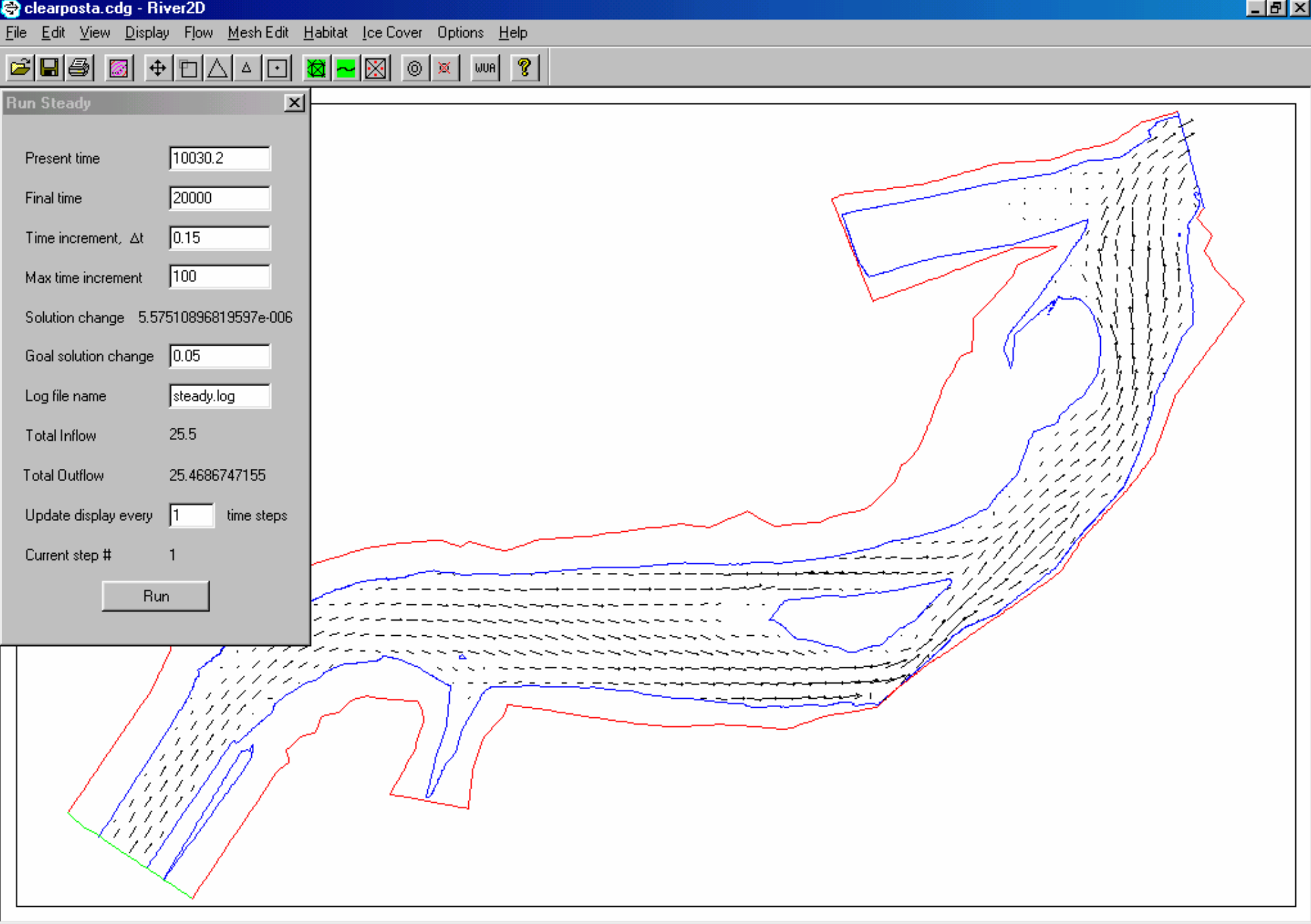


Example of a triangular irregular network grid used for hydraulic calculations



clearposta.cdg - River2D

File Edit View Display Flow Mesh Edit Habitat Ice Cover Options Help



x = 751.112537, y = 1533.740245

Example of velocity validation